Raising the Age of Marriage Entry and Child's Nutrition Intake? Evidence from the Reform of Ethiopia's Family Law

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Abstract

This study investigates the impact of a Family Law reform in Ethiopia that raises the age of marriage entry for females (among other aspects of the law) on the nutritional intake of the children of affected women. Using the difference-in-differences and event-study strategies, the result suggests that exposure to the reform led to a significant increase in dietary diversity (14% increase relative to the mean) and a significant increase in the likelihood of consuming fruits & vegetables, vitamin A-rich fruits & vegetables, green leafy vegetables, and animal source foods. The effect does not appear to be due to changes in women's economic engagement, such as their agency and outside options. Instead, it seems to imply that the implementation of the reform affects women's social status in terms of their decision-making power over sexual and marital relations.

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1. Introduction

In many sub-Saharan African countries, the age of entry into marriage, especially for females, remains low. Girls become mothers earlier while neglecting other premarital human capital accumulation endeavors. In such an environment, women's bargaining power and premarital resource accumulation decrease. In addition, they are likely to experience additional adverse social outcomes with significant negative generational effects (World Bank, 2012). To address this concern, countries in this region are legislating a minimum marriage entry age for women, including Ethiopia, which reformed her Family Law in 2000 with a provision that raised the minimum marriage entry age from 15 to 18 for only girls, while leaving the minimum age for boys unchanged at 18 years old.

The reform also addresses other aspects of marital relations, such as women's agency, their right to labour outside the home without spousal approval, and the division of assets upon divorce or dissolution of marriage. Nevertheless, the law's provision to increase the age of consent to marriage for girls is most effective at delaying marriage entry and enhancing women's bargaining power (McGavock, 2021). This effect parallels the findings in Kenya and India with similar reforms that improve women's societal standing, demonstrating an increase in women's agency and participation in intra-household decisions following the passage of the reform (Harari, 2019; Heath & Tan, 2020). Yet, it remains unclear the generational benefits of improvements in women's status, particularly in developing countries where children encounter significant obstacles to their development and well-being.

Child well-being is crucial for achieving sustainable development goals and necessitates immediate attention in Ethiopia, the country of focus for this study. 28% of child deaths in Ethiopia are attributable to undernutrition and malnutrition-related diseases, such as anemia, affect 57% of children under the age of five (UNICEF, 2021). This paper empirically investigates the effect of implementing the Ethiopian Family Law (EFL) on the nutrition intake of the child of a woman affected by the law.

Addis Ababa and Dire Dawa were the first to implement the EFL in April 2000, followed by *Oromia, Amhara, and Southern Nations, Nationalities, and Peoples (SNNP)* in

2002, 2003, and 2004. The implementation deadlines for reform in other regions are 2006 *(Benishangul-Gumaz),* 2007 *(Tigray),* and 2008 *(Gambella* and *Harari). Afar* and *Somali* are the only regions that do not implement EFL. To assess the consequences of implementing the EFL, a difference-in-differences and event-study strategy was developed, taking into account the staggered implementation of the reform across the regions in Ethiopia and variations in the timing of a woman's marriage entry.

The identification considers affected women as those who reside in a region with EFL adoption and whose marriage years correspond to post-EFL adoption periods. Using data from the Demographic and Health Surveys (DHS) for the years 2000, 2005, 2011, and 2016, the analysis demonstrate that the child of the affected woman had an increase in dietary diversity score. The point estimate indicates a 0.28-unit increase in the dietary diversity score for the child of the affected woman, which corresponds to a 14% increase over the sample mean. This initial result is consistent when subjected to a battery of robustness tests and validated by an event study design that demonstrates immediate and substantial increases in this outcome in post-EFL adoption periods.

Other indicators of a child's nutrition intake considered were (a) the disaggregated measure of child food consumption, (b) anthropometric outcomes, and (c) anemic status. For the disaggregated measure of food consumption, the results indicate that the reform significantly increased the likelihood of the affected woman's child consuming fruit and vegetables, vitamin A-rich fruit and vegetables, green leafy vegetables, and animal source foods. Despite observing anthropometric gains and improvements in the anemia levels of the child of the affected woman, these effects are not statistically significant at the traditional 1 or 5 percent levels.

These initial findings contribute to the existing literature regarding the factors that influence the nutritional intake of children in developing countries. Agricultural interventions in the form of tree cover (Ickowitz et al., 2014), maternal education (Frost, Forste, and Haas, 2005), cash transfer interventions (Manley et al., 2013, and 2020), and behavioral change

interventions (Ahmed, Hoddinott, and Roy, 2019) are considered as significant determinants in these studies. However, the results of this study contribute to the literature by providing additional evidence on the intergenerational effects of the new wave of family law reforms that delay marriage entry for girls, which are becoming increasingly popular in developing countries (World Bank, 2012) and specifically in sub-Saharan Africa.

Underlying the estimated effect are two theoretical channels: the social status and economic empowerment for women as a result of the legal requirement to raise the minimum age for girls' marriage. The social status argument asserts that the law may have increased women's decision-making power, voice, opinions, and independence in choosing their life path, including seeking improved health access for themselves and their children. This claim is supported by evidence from the data. Regarding their sexual and marital relations, the evidence points to improvements in women's decision-making power. In contrast, the data do not support an improvement in the economic status of women as a result of the implementation of the reform. For instance, the estimates do not provide conclusive evidence that the reform resulted in significant changes to women's outside options and agency.

This study's inquiry into the effect of the reform on child nutrition advances McGavock's (2021) study into whether the reform caused affected women to delay marriage entry. It demonstrates that in addition to delaying marriage for affected women, the reform also led to nutritional improvements for their children. In addition, highlighting that changes in women's social standing rather than economic factors may have caused the observed effect for dietary diversity is in close agreement with the findings of Field and Ambrus (2008), Raj et al. (2009), and Chari et al. (2017). This study contributes to debates about the implications of changing marriage laws, which is related to Bharadwaj's (2015) finding that stricter marriage-related regulations that delay marriage entry lead to delayed fertility and an increase in girls' school enrollment. Belles-Obrero and Lombardi (2023) also studied the child marriage law in Mexico and reached the conclusion that prohibiting child marriage results in a statistically significant decrease in the number of registered child marriages. McGavock's (2021) study on

Ethiopia's marriage law also concluded that reforming the marriage law slowed the entry into marriage for females under the age of 16 in regions where early marriage was more prevalent prior to the reform. However, not much is known about the relationship between marriage laws and the nutritional status of children born to women affected by these laws.

2. Child Nutrition and Ethiopia's Family Law

In Ethiopia, as in many other developing nations with patriarchal cultural structures, a significant proportion of women's time is devoted to child nutrition. Consequently, research indicates that empowering women may have a second-order impact on child nutrition (Jones et al., 2019; Melesse, 2021). Ethiopia revised its Family Code in July 2000 by amending the Family Code of 1960 to encompass most aspects of family relations, including marriage entry age, divorce, and women's outside options or enhancing their agency outside the home. In particular, the reform's focus on the marriage entry age raised the age of formal marriage unionization for females from 15 to 18. Under this new regulation, pre-reform marriages involving girls under the age of 18 remained valid. In addition to granting women the right to work outside the home without spousal consent, the reform also mandated equitable property division upon divorce (McCavock, 2021).

Due to the staggered implementation of this law across Ethiopia's regions, *Addis Ababa* and *Dire Dawa* were the first regions to implement it in 2000. Subsequently, the other Regions implemented the laws at various times (see Table A1 in the appendix). As of this writing, only *Afar* and *Somali* have not adopted the law. The varying implementation timing is a result of the regions' efforts to ensure that central legislation is consistent with their local customs, religion, and traditional beliefs. Such local peculiarities vary by geographical boundaries in Ethiopia, and the political structure of the country grants each region the autonomy to implement legislative proclamations at its discretion, taking such alignment issues into account.

The regional application of the law is consistent throughout all communities within the region. Since the cultural characteristics of each region were taken into account prior to the adoption of the law, there is no evidence that its application was not universal and

comprehensive. Newspapers, radio, and community plays were utilized to effectively disseminate information and conduct campaigns in the communities regarding the new law and the dangers of child marriage for girls[2]. Community leaders were also trained to disseminate information about the new law to the local populace (McGavock, 202). Despite the fact that marriages in Ethiopia, particularly in rural areas where nearly 80% of the population resides[3], are predominantly based on traditional, customary, or religious ceremonies, there was substantial compliance with the new marriage age. Figure 1 depicts substantial changes in the prominent aspect of the law (increasing the minimum age for marriage) following the reform, primarily because each region can implement and enforce the law after considering its compatibility with ubiquitous local factors. Before the reform, the average age of entry into marriage was 16 years, but it increased to 19 years after the reform was enacted.

Similarly, the within-region variations in the marriage entry age depicted in Figure 2 support this evidence of a significant difference in marriage entry age as a consequence of the passage of the reform. In the year following the implementation of the reform, the average age of entry into marriage increased in all regions that had adopted it. Consequently, the staggered adoption of the reform is central to the identification strategy of this study, which aims to estimate the effect of the reform on the nutritional intake of the child of the affected woman.

3. Data

The data for my primary analysis comes from 2000, 2005, 2011, and 2016 rounds of the Demographic and Health Surveys (DHS) of Ethiopia. The data include comprehensive demographic information on respondents (women), such as their marital status, year of marriage, fertility information (i.e., the year of their first birth), and region of residence. The DHS is nationally representative and contains a relatively large sample size of women in marital unions who began having children after marriage. This sample is preferred because it eliminates potential bias from women who may not be married but have begun childbearing

[2] Qualitative evidence shows substantial information spread about the EFL across groups (Tassew, 2007).

[3] This statistic comes from the World Bank World Development Indicators on rural population (% of the total population).

responsibilities. The DHS also includes related health and dietary information about the infants of the sampled women. The Birth Recode Survey[4] section of the DHS collects comprehensive information on infants born to women between 15 and 49 years old. This component of the DHS makes it superior to other sources for investigating the effects of the Ethiopian Family Law (EFL) reform on children's dietary intake[5]. Lastly, the Ethiopian DHS also documents the region of residence for each woman, which is used to identify the sample woman's actual region of residence as of the passage of the reform.

Child's nutrition intake is determined by calculating the dietary diversity score, which is the sum of the number of food groups from 14 food categories that were present in the child's diet on the previous day or during the previous week[6,7]. The average sampled infant consumes roughly two food groups (see Table 1). Figure 3 also demonstrates that the average dietary diversity of the children in the sample varies by region in Ethiopia, with those whose mothers reside in *Addis Ababa* having the highest scores. In contrast, mothers with infants in the *Afar* region have the least dietary diversity.

The dietary diversity score assigns equal weight to each food group. However, not all food groups are equally important for a child's nutrition, particularly when considering the micronutrients most commonly lacking in the diets of sub-Saharan Africans (Ickowitz et al., 2014). Consequently, the supplementary analysis considers the disaggregated measure of a child's nutritional quality. (a) A binary indicator indicating whether the child of the sampled

[4] The analysis for individual women utilizes data for the individual recode in the DHS survey. This data is preferred because it includes more survey information about the affected women, unlike the birth recode survey.
[5] The summary statistics are presented in Table 1.
[6] In some of the survey instruments (DHS 2011 and 2016), this question was asked for a day, and in others (DHS 2000 and 2005), it was asked for the past seven days, so the responses are combined in this study's analysis. This approach follows the Food and Agricultural Organization (FAO) and the Food and Nutrition Technical Assistance Project (FANTA) guidelines for creating dietary diversity scores based on the following 14 food groups: cereals; vitamin A-rich vegetables and tubers; white roots and tubers; green leafy vegetables; other vegetables; vitamin A rich fruits; other fruits; organ meat; flesh meat; eggs; fish; legumes, nuts, and seeds; milk and milk products; oils and fats.
[7] There are challenges in combining responses for food consumption the night or day before the survey and the response for the previous seven days. Nonetheless, the combination of these two variables is intended to improve the analysis power. A test of difference for the treatment and comparison region shows consistent direction and point estimates for the two periods affected - i.e., DHS 2000 and 2005 and DHS 2011 and 2016. Note that the estimates for this additional analysis are available upon request.

woman consumed fruits and vegetables within the past day or week[8]. b) A binary indicator indicating whether the child of the sampled woman consumed Vitamin A-rich fruits and vegetables within the previous day or week. c) A binary indicator indicating whether the child consumed green leafy vegetables in the previous day or week. (d) A binary indicator if the child consumed 'other' fruits and vegetables in the previous day or week, and (e) a binary indicator if the child of the sampled woman consumed food from an animal source in the previous day or week[9].

These nutritional status measures capture contemporaneous maternal actions that could enhance the health of offspring. These measures are preferable for this study's focus, unlike the child's height, which is a complex indicator determined by health shocks and maternal breastfeeding practice, and other genetic, environmental, and behavioral factors[10] (Akresh, Verwimp, & Bundervoet, 2011; Almond & Currie, 2011; Beckerman-Hsu et al., 2020). Nonetheless, to confirm the consistency of the initial results using outcome variables of the child's nutrition over a longer time period, the supplementary analysis evaluates the child's anthropometric failure and anemic status. These indicators are popular in the relevant literature for measuring the quality of child nutrition (Bhargava & Docquier, 2008; Van de Gaer et al., 2014; Woldemichael, Kidane, & Shimeles, 2022).

4. Empirical Strategy

To examine the effect of EFL on the nutritional intake of the children of affected women, it is insufficient to compare the outcomes of women who entered marriage before and after the reform was implemented in their region of residence, as any impact will be

[8] Fruits and vegetables are important sources of vitamin A, vitamin C, folate, iron, and phytochemicals, and adequate consumption of a diverse range of these nutrients is an important aspect of improved health and nutrition. To be precise, the World Health Organization ranks inadequate consumption of fruits and vegetables as one of the top ten global health problems (Ickowitz et al., 2014). In addition, vegetables provide important minerals, such as iron and calcium.

[9] Animal-source foods are relevant sources of iron, zinc, vitamin A, and vitamin B12. Their low consumption results in low intake of protein and bioavailability of many micronutrients, and matters for a child's growth and cognitive function (Neumann et al., 2003).

[10] There is an active engagement of the Ethiopian government, following the WHO guidance, to promote exclusive breastfeeding practice for the first six months of a child, which could affect on other anthropometric outcomes of children.

confounded by secular trends. A difference-in-difference strategy, estimated with a two-way fixed effects approach, is adopted to establish a reliable estimate that isolates policy impacts from such a secular trend. This strategy effectively controls for systematic differences across regions and marriage entry cohorts by combining cross-cohort variations in exposure to EFL (by year of marriage entry) with cross-region variations in the potential impact of EFL adoption on child nutrition. McGavock's (2021) study applied this approach, similar to the identification strategy of Heath & Tan (2020), only that in the latter study, the affected cohort is women younger than a specific percentile of age at marriage entry in the year of the passage of a particular inheritance law in the resident's location.

In this study's design, it is assumed that, in the absence of EFL adoption in each region of Ethiopia, the average change in nutrition and other variables of interest would have been the same for the child of women in EFL adopting and non-adopting regions (i.e., regions that have implemented the reform and regions that have not as of the survey year). This claim was verified by examining the existence of parallel trends in dietary diversity for children of married women in EFL-adopting and non-adopting regions prior to the year in which some regions adopted the reform. Figure 4a depicts the parallel trend when the treatment region is *Addis Ababa* and *Dire Dawa* (2000) and *Oromiya* (2002), whereas Figure 4b depicts the parallel trend when the treatment region is *Amhara* (2003) and *SNNP* (2004).

Figure 4a demonstrates that in periods before the reform adoption, the primary indicator of child nutrition followed similar trends for women who were married before the reform adoption in the EFL-adopting and non-adopting regions. It demonstrates that dietary diversity began to diverge between EFL-adopting and non-adopting regions only after 2000, when *Addis Ababa* and *Dire Dawa* adopted the law. Figure 4b demonstrates a divergence in periods immediately following *Amhara*'s 2003 adoption of the reform, as well as a potential violation of the parallel trend one year prior to 2003. In the section that follows, additional steps are taken to verify the parallel-trend assumption in an event-study graph, as well as other placebo

tests. The placebo analysis investigates the possibility that the estimated results do not exist, assuming that the adoption timing by Ethiopian region is not precisely identified.

A key identifying variation is the timing of marriage entry only after the reform adoption in each region. A woman is affected by the reform if the marriage entry year coincides with periods after the reform adoption. One could argue that marriage timing decision is endogenous, as it is determined by a variety of factors, including family endowment and the quality of premarital endowment (Chari et al., 2017; Belles-Obrero & Lombardo, 2023). If the timing of marriage was influenced by EFL adoption, this selection would be captured by the treatment effect estimates. However, this issue would be of particular concern if there were anticipations of adoption, which is highly unlikely given the short lag between the first region to adopt the reform and subsequent adopting regions (see Table A1).

In addition, the political process involved in the regional adoption of the reform makes it extremely unlikely that families prevented their daughters from getting married in anticipation of the law's adoption in their region. The political structure explains the exogeneity of the reform's timing because the design of Ethiopia's political system accommodates regional autonomy in enacting the reform of the central government. Common ethnicities and "nationalities" unite the population of each region, and the regions can enact and ratify their own laws regardless of whether or not the central government adopts a particular law. For instance, the central government has immediate jurisdiction over the two largest federal cities - *Addis Ababa* and *Dire Dawa* - and any legislative proclamations take immediate effect only in these regions (McGavock, 2021). Aside from regions governed by the central government, others take into account a variety of factors when enacting and approving specific laws, such as customary, religious, and traditional considerations that directly impact the ethnic group within such regions. In the case of the EFL adoption in the *SNNP* and *Oromia* regions, for example, the ratification was delayed due to delayed legislative actions and polygamy disputes (Pausewang et al., 2002; Smith, 2013). Nonetheless, comparable laws are established once each region in Ethiopia has completed the ratification procedure for a particular new law.

Ethiopia has regional anthropological differences, primarily ethnocultural and ethnolinguistic (Pankhurst, 1992). These differences are critical for the identification of this study, as described below. First, it eliminates the possibility of selective migration influencing the treatment effect. Second, one can rely on the variation by the woman's region of residence to determine the effect of the EFL, with some caveats regarding the exogeneity of the regions' adoption timing. In contrast to more developed regions (e.g., *Amhara* and *Oromia*), less developed regions (e.g., *Gambella* and *Benishangul-Gumaz*) may have an earlier adoption timeline. This is determined by factors such as education and health development. In addition, cultural differences between regions may impact the timing of adoption, as the *Afar* and *Somali* regions have not yet adopted the law, possibly for cultural reasons (Sisay, 2015). With these caveats in mind, one cannot rule out the possibility of other factors trending and correlating with regional law adoption timing. To address such concerns, the empirical analysis in this study incorporates region-specific trends throughout the regression analysis. It interacts the survey year with the dummies for each of the sampled women's regions of residence in order to account for potential time-invariant factors that vary by sample region.

The empirical specification is described in equation 1 as follows:

$$Y_{imrdt} = \beta_1 Compliant_{\boldsymbol{rt}} + \beta_2 Post_{\boldsymbol{mdt}} + \beta_3 Compliant \times Post_{\boldsymbol{mrdt}} + \delta X_{\boldsymbol{mrdt}} + \gamma_d + \zeta_r + \delta_t + \varsigma_c + \tau_{re} + \xi_e + \varpi_m + \varepsilon_{mrdt} \quad (1)$$

Where Y is the indicator of nutrition intake for a child i of mother m that resides in region r with a year of marriage entry d and was surveyed in year t. The main explanatory variable interacts the binary indicator of whether the woman resides (or not) in the region that has implemented the EFL as at the survey year (i.e., $Compliant_{\boldsymbol{mrt}}$) and the indicator whether the year of marriage entry coincides (or not) in periods after the date of the EFL adoption in the region as at the survey year (i.e., $Post_{mdt}$). X_{mrdt} is a set of household and individual woman's characteristics measured in survey period t, namely the index for household assets,

household size, urban dummy, the age of the woman, and the sampled woman's educational attainment and age at first marriage[11].

A number of fixed effects are included in the analysis, including factors common among married women residing in the same region, such as access to medical information/advice and interventions specific to particular regions that could directly matter for child nutrition intake. Hence, included in the empirical model are the fixed effects at the region of residence (ζ_r) and year of marriage level (γ_d). The survey year fixed effects (δ_t) control for the seasonality in factors that could affect a child's nutrition intake that is common to all regions, including inflation in food expenditure. Other specific variations at the community level, including differences in agricultural production that could determine food prices or reforms in the health care system that may vary by specific communities (see Alebachew & Waddington, 2015), are important factors that could explain the outcome variables. Therefore, the fixed effects for the community of residence (ς_c) is included in the empirical analysis.

The fixed effects at the levels of the religion (τ_r) and ethnicity (ξ_e) of the sampled woman was included, noting the evidence in the context of Ethiopia that religion and ethnic/cultural factors determine the demand for health-related services (e.g., Miller et al., 2021), relevant for child wellbeing. Finally, the mother's fixed effects (ϖ_m) was controlled in the analysis, since certain factors are peculiar to children of the same mother. The standard errors (ε_{wrcyt}) are clustered by the region ζ_r[12] because the decision to adopt the law is made at the regional level, and so are many other factors, such as health infrastructures peculiar to a

[11] These variables are potential responses to the reform adoption and the discussions are regarding how they are used for the analysis in subsequent section.

[12] The main result is consistent when clustering at different levels (i.e., at the community level and a two-way clustering at the year of marriage and region level).

certain region, for instance, which also affects child wellbeing. All estimations are weighted using sample weights provided in the DHS[13].

In summary, the systematic variations in trends specific to certain regions, such as economic conditions and average education over time, which could trend with the timing of adoption are flexibly controlled by the region-specific linear time trends incorporated into our model. This study's simplified empirical strategy can thus be explained as comparing the average nutrition intake of a sampled woman's infant in EFL-implementing regions to those in non-EFL regions, conditioned on the year of marriage entry. Consequently, any difference in outcome can be attributed to the effects of EFL adoption in the region where the woman resides.

5. Effect of the EFL Adoption on Child's Nutrition Intake

5.1. Effects on Dietary Diversity

I present in Table 2 the results of the effect of the adoption of the EFL reform on the average nutritional intake of the child of the affected woman, as described by Equation (1). Column "a" reports the preferred regression estimates that exclude the education and age of the woman at first marriage entry[14]. In particular, the preferred regression analysis combines the following controls: household size, asset index, urban dummy, the current age of the woman, region-specific linear time trends, and the previously highlighted fixed effects. In contrast, column "b" comprises all variables, including the woman's educational attainment and age at the time of her first marriage.

The results in Column 1a indicate a significant increase of 0.28 units in the dietary diversity score of the child of the woman who married after the EFL adoption in her region. This represents a substantial increase of approximately 14% of the sample's mean dietary diversity score. Even after adjusting for maternal education and age at marriage, the dietary

[13] The sample weight compensates for different probabilities of selection within the samples and varying levels of non-response. Adjusting the estimates to the weights may be relevant to improve the precision of this study's estimates for a policy whose adoption varies across regions.

[14] These variables could essentially be mechanisms in understanding how the EFL adoption may have affected the nutrition intake of the child of the affected woman.

diversity score maintains its increase; however, the coefficient in column 1b is reduced by a negligible 9%.

The Table 2 results, particularly the direction of the coefficient, are robust to alternative estimations. The first is that the results are insensitive to the clustering level of the standard error. The initial estimate clusters standard errors by region. Nevertheless, because news of the reform may have spread predominantly at the subnational administrative level, compliance may be more strongly correlated at this level than at the regional level (McGavock, 2021). Moreover, the error term could be correlated for women in the same region and marriage year, as the majority (or at least a portion) of the variation in adoption and implementation may be at the level of region and marriage year. Estimates are presented in columns 1 and 2 of Table A2 when standard errors are clustered at the level of DHS enumeration area and region-marriage year, respectively. The signs of the results are consistent, as shown in Table 2. When clustering at the enumeration area, the significant value varied marginally (see column 1).

The second consideration is that the results in Table 2 may be confounded by the 1991-1995 educational reform in Ethiopia, which eliminated school tuition for grades one through ten in all government-run schools and introduced local language as the medium of instruction in certain regions of the country. This educational reform may have a substantial impact on the human capital formation of affected individuals (Seid, 2016; Ramachandran, 2017; Chicoine, 2020), which may explain why women are able to care for their children regardless of the EFL adoption. This argument is plausible due to the proximity of the reform period to the first year of EFL adoption in 2000. Consequently, the child of a woman impacted by the education reform may consume more nutrients than the children of women not affected by the reform. To ensure that this confounding variable is not driving the results in Table 2, an instrumented control that captures the average schooling rate of women who married in their region two years after EFL adoption is included in the analysis (Freyaldenhoven et al., 2019; McGavock, 2020). The results in column 3 of Table A2 are statistically comparable to those presented in

Table 2, indicating that the education reform of previous years is not responsible for the effect of EFL on dietary diversity.

Table A2's columns 4, 5, and 6 provide additional evidence of the education reform's non-confounding effect. Estimates indicate that women residing in the region that has implemented the reform, with marriage entry occurring years after the implementation of the reform, and those in the comparison group do not differ in terms of highest level of education attained, years of education completion, and literacy level.

The next consideration is that distance to urban centers determines the quality of awareness and enforcement of the law across regions. Geography shapes economic development, public service delivery, mobility, and the patterns of information flow in Ethiopia, as has been established (Yitayal et al., 2014; Stifel & Minten, 2017; Vandercasteelen et al., 2018; Abate et al., 2020). In this assessment, equation (1) is estimated by including an indicator of remoteness, which is the distance between the woman's precise location based on DHS geolocation data and the nearest city with more than 20,000 residents. Three additional binary indicators based on distance thresholds from the nearest city or municipality with a population exceeding 20,000 is included in the analysis. Again, the result in column 7 of Table A2 is identical to the results in Table 2 in terms of result direction, point estimate, and significant value.

A final potential confounding program is Ethiopia's Productive Safety Net Program (PSNP), a rural safety net programme for food-insecure households that was launched in 2005 to provide cash and food transfers to affected households (Ministry of Agriculture – Ethiopia, 2014 for details about the PSNP). This programme targets *Afar*, *Amhara*, *Dire Dawa*, *Harari*, *Oromiya*, *Somali*, *Southern Nations, Nationalities, and Peoples (SNNP)*, and *Tigray* rural households. Consequently, the existence of such a programme may confound the EFL's influence in these regions. In a subsequent analysis, column 8 of Table A2 is modified to account for the presence of this programme during the sample period by adjusting for the binary

indicator depicting the PSNP locations (rural areas in the program's regions). Again, the point estimates and statistical significance remain unchanged.

The results of the falsification test in column 9 of Table A2 indicate that the effects of the EFL on a child's nutrition only exist when the analysis considers the exact dates of the EFL's adoption in each region. This analysis arbitrarily assigns false reform dates to each region implementing EFL (see Table A1). After that, equation one is estimated by substituting the post-reform period with the falsified dates, such that Compliant × Post is the interaction between the binary indicator for the 'true' EFL adopting region and the binary indicator for women with marriage entry years coinciding with periods after the false reform adoption period in the region of residence for the sampled women.

Having established a consistent and robust increase in dietary diversity for the child of the sampled woman with marriage entry in periods after EFL adoption in her region of residence, the differential pre-trends and dynamic treatment effects are formally tested using an event-study design. The marriage year before and after the first year of adoption (i.e., 2000) is replaced by *Addis Ababa* and *Dire Dawa* with a set of dummy years for periods pre- and post-reform. The event-study specification is:

$$Y_{imrdt} = \sum_{\boldsymbol{c}} \beta_c \, Compliant_{\boldsymbol{r(t+c)}} + X_{\boldsymbol{mrdt}} + \gamma_d + \zeta_r + \delta_t + \varsigma_c + \tau_{re} + \xi_e + \varepsilon_{mrdt} \qquad (2)$$

Y_{imrdt} is the dietary diversity score for a child *i* of mother *m* that resides in region *r* with a year of marriage entry *d*, and was surveyed in year *t*. $Compliant_{\boldsymbol{r(t+c)}}$ is a dummy taking the value of 1 for *c* years relative to the year in which the reform was enacted in region *r* in regions that implemented the EFL, and 0 in all other years and regions. All observations fall within the eight years before and after the reform because the region with the most recent reform occurred eight years after the EFL's adoption and 1992 is precisely eight years before *Addis Ababa* and *Dire Dawa* adopted the EFL.

In addition, equation (2) contains the standard control variable, as described in equation (1), along with the fixed effects and region-specific linear time trends. The standard errors used

to calculate the 95% confidence intervals are concentrated at the regional level because, as described in Section 4, these are the levels of locational variation in EFL adoption. The estimation is weighted based on the DHS sample weights.

The trend depicted in Figure 5 lends credence to the assumption that the quality of dietary diversity in these ranges has exhibited little to no pre-trends since the introduction of the EFL. The estimates are predominantly concentrated around zero. In contrast, in the post-EFL adoption period, the effect sizes appear to have risen substantially over time. These effects are mostly significant, indicating that the EFL adoption had immediate and sizeable effects on dietary diversity improvement of the child of the affected woman (i.e., the woman whose marriage entry year coincides with the period after the EFL adoption).

5.2. *Effects on Other Food Categories*

To ascertain which food category intake was affected by the adoption of EFL, this section examines the disaggregated food category estimates while leaving the identification variables unchanged. Recall that while dietary diversity aggregates the number of food groups consumed by each child in the previous day or seven days and gives each food group equal weight, it does not account for the fact that not all food groups are equally important for the quality of a child's nutrition, particularly the micronutrients necessary for optimal child development, growth, and cognitive function.

Table 3 reports the treatment effect on the likelihood of fruit and vegetable, vitamin A-rich fruit and vegetables, leafy vegetables, other fruits and vegetables, and animal source food consumption by children. The results report only the preferable regression that excludes potential endogenous control variables, such as the woman's educational attainment and marriage entry age. Estimates from column 1 suggest that the likelihood of the affected woman's child consuming fruits and vegetables within the prior day or week increased by approximately 9 percentage points (or approximately 39% relative to the mean).

Estimates in columns 2, 3, and 5 indicate increases in the likelihood of the affected woman's child consuming Vitamin A-rich fruits and vegetables (by 10 percentage points), green leafy vegetables (by 6 percentage points), and animal source foods (by 5 percentage

points), respectively. A similar positive effect exists for the consumption of other fruits & vegetables, although it is not statistically significant at the traditional 1 and 5 percent levels (see Column 4). The positive effects observed for the child of the affected woman are a result of the reform implemented in the woman's region of residence.

5.3. Effects on Child's Anthropometric Failure and Anemia Status

A potential drawback of measuring nutritional intake based on daily or weekly food consumption is that it disregards the long-term nutrition outcomes of subjects. Measurement of child anthropometric outcomes and their anemic status captures this long-term nutrition status, and these measures are popular in other comparable literature that focuses on child nutritional status (Bhargava & Docquier, 2008; Van de Gaer et al., 2014; Woldemichael, Kidane, & Shimeles, 2022). With these measures, it is possible to determine whether EFL adoption has resulted in long-term nutritional improvements for the children of affected women.

This supplementary analysis explores the influence of EFL adoption on anthropometric outcomes and anemia status indicators. It defines anthropometric failure if a child's weight-for-age (underweight), height-for-age (stunted), or weight-for-height (overweight) z-score is less than minus two standard deviations. In contrast, the level of anemia is defined as a binary indicator based on whether the child has moderate or severe anemia. In columns 1 through 5 of Table 4, the results of these additional analyses are shown.

The estimate in column 1 suggests that the child of an affected woman is more likely to report a decline of 2.3 percentage points in the likelihood of being underweight, stunted, and wasted. This effect only becomes significant at 10%. Additionally, the child of an affected woman is less likely to report being underweight, stunted, or wasted (see columns 2 through 4). However, such effects do not differ significantly from zero. For the estimate of the likelihood that the child is moderately or severely anemic, the column 5 results indicate a decline of 8.2 percentage points (or a 29% reduction relative to the mean) that is only significant at the 10% level.

Overall, the direction of the coefficient implies an improvement in the anthropometric and anemic status of children in regions where EFL is adopted. Such directions indicate a plausible improvement in the long-term nutritional outcomes for the children of affected women.

6. Exploring Mechanisms

Recall that EFL's objective is to improve women's status in intrahousehold marital relationships and in society as a whole by, among other means, statutorily raising the age of marriage entry. The mechanism through which raising the minimum age of marriage affects child nutritional outcomes remains an empirical question. There may be two mechanisms at play: the enhancement of women's social status and economic empowerment channels. While the data does not permit a complete and distinct exploration of these two channels, it is still possible to explore suggestive evidence for or against the respective mechanisms based on the data that is available.

Assuming that the improvement in child nutrition observed among affected women residing in the EFL-adopting region is primarily due to changes in women's social status, such as decision-making power, voice, opinions, and independence in their ability to choose their life course, one would expect to observe an effect of the EFL on factors that reflect female autonomy in decision-making in the household and community. Similarly, elements reflecting female autonomy in decision-making would mechanically translate to an improvement in child nutrition, since women can now negotiate or determine the quality of mating as a result of an increase in their "voice" and "exit" within the household (Hallward-Driemeier & Gajigo, 2013). In addition, child welfare outcomes may improve because women can now choose to delay childbearing or the number of children to have in order to reduce household budget strain, autonomy on care choice, the quality of investment in their children, and the likely bequest of premarital capital accumulation from delayed marriage entry (Heath & Tan, 2020; Gebre, 2020; Saaka, 2020; McGavock, 2021).

On the other hand, if households' income and women's earnings increased in regions that adopted the EFL due to their improved outside options, one would also anticipate observing an effect of the EFL on women's economic engagement/activities and, consequently, an improvement in child nutrition. Following the approach of Heath and Tan (2020), the indicators of labor market participation and the decision to visit outside household social networks are used as proxies for women's outside options and increased economic engagement. The following sections discuss how the analysis of this study applied these indicators to establish mechanisms.

A. Women's Social Status

Suppose that changes in the minimum age for marriage further enhance factors that reflect women's status and independence in their ability to choose their life course, including their ability to negotiate better health access for themselves and their children, then one should observe an improvement in the indicators that depict these factors. Data on a woman's decisions regarding her sexual relations, such as age at first marriage entry, first childbirth, and first sexual encounter, are used as proxies for social standing and marital relations (Chari et al., 2017; Baird et al., 2019; Heath & Tan, 2020). Women's participation in decisions regarding their health and contraceptive use is also a proxy for their social status. De Brauw et al. (2014), Chari et al. (2017), Jones et al. (2019), Heath & Tan (2020), and Melesse (2020) have demonstrated that these factors affect a child's well-being as a result of the empowerment effect on a woman's ability to negotiate or make quality decisions for herself and her child's well-being, and match such decisions with actions.

Table 5 displays the results of the estimation of equation (1) in which the outcome variables are replaced with the indicators of a woman's decisions regarding her sexual relations. The first column indicates that affected women who reside in the EFL-adopting region report an increase in their age at first marriage entry of 0.039 years, which corresponds to an increase of 0.23 percent relative to the mean. In the second and third columns, the results reveal that the affected women residing in the EFL adoption region report considerably older ages at first childbirth (2.1% older relative to the mean) and first sexual encounter (2% older relative to the

mean). Moreover, affected women residing in the EFL-adopting region are more likely to report making joint decisions with their spouse regarding contraceptive use (by 6.1%), an essential indicator of a woman's control over her sexual or fertility decisions (De Brauw et al., 2014).

Consideration is also given to a woman's enhanced mating decisions as a status indicator (Heath and Tan, 2020). One could argue that the positive relationship between EFL adoption and child nutrition is due to the fact that affected women can now negotiate or determine their life course and those of their children. After all, the law increases women's "voice" and "exit" within the marital relationship, particularly in terms of marriage age and divorce provisions. If this were the case, there would be a positive correlation between EFL adoption and indicators of optimal marital decisions, as is the case with other laws affecting women's empowerment (Harari, 2019; Corradini & Buccione, 2023). Since the reform raises the status of women, one would expect couples formed after the reform to be a more balanced match, as a result of optimal decisions and attitudes that are more favorable to women. Other implicit factors, such as higher premarital endowments (including education, maturity, and better preparedness) available for women to negotiate favorable marriage contracts could result in exposed women marrying better-quality husbands. These are also essential factors for children's wellbeing[15].

The DHS data comprise information on the quality of the spouse of affected women who entered marriage after the EFL was adopted in their region. These include the residency status of the spouse/husband, the educational attainment of the spouse/husband, the age difference between the woman and her spouse/husband, and the quality of economic engagement of the spouse/husband. The result in column [1] of Table 6 shows a 5.5-percentage points significant increase in the likelihood of the affected woman reporting that the spouse resides in the home as opposed to living outside the home. The affected woman also reports

[15] Spousal quality is an essential determinant of child wellbeing because of its effect on household income and resource availability for child care, the quality of resource allocation, marital stability, and spousal support for improved child wellbeing (World Bank, 2012).

entering marriage relations with higher-quality spouses, such as men with at least a primary, secondary, and university education (by a significant 4.4-percentage points), men with an additional education year (by a significant 11 percent increase relative to the mean), and men with a closer age difference. It is estimated that the age gap between the spouse residing in the EFL adoption region with marriage entry after the reform adoption will be reduced by one year. Although column 5 indicates a higher probability of marriage entry with spouses in professional, managerial, and skilled occupations for the affected woman residing in the EFL adoption region, the effect is not statistically significant at the traditional 1 or 5 percent level.

The direction of all coefficients indicates a significant improvement in the woman's standing within the household and society on matters related to her fertility and sexual relations, such that they are now entering marital relations with higher-quality partners than their counterparts who entered marriage prior to the adoption of EFL or who do not reside in the EFL adopting region. These are significant changes in favor of the affected women that may transcend other issues pertaining to the woman's capacity to care for her child and negotiate a better outcome.

B. Economic Channels

This subsection interrogates complementary changes in the economic situation of women due to EFL adoption. This complementarity is anticipated because the EFL may have increased women's outside options by raising the age of marriage entry and increasing "voice" and "exit" within the marital relationship. Theoretically, these factors matter for a woman's agency (Heath & Tan, 2020), in relation to her investments in her child's well-being (Chari et al., 2017).

Table 7 considers the indicators of a woman's outside options and agency by focusing on whether the woman is involved in making decisions regarding whom to visit and her labor market engagements in columns [1] to [5]. There is no conclusive evidence presented that EFL lead to significant changes in the outside options and agency of women. This result differs from Hallward-Driemeier & Gajigo's (2013) findings that the EFL is associated with significant increase in labor participation, mainly for occupations likely to have higher returns.

Nonetheless, Table 7 results accord with McGavock's (2021) conclusion that there is no effect on the labour market outcome of affected women. It speaks to the conclusion that the EFL had a significant impact on the age at which women entered marriage, but not on other potential aspects of the reform, such as allowing women to work outside the home without the consent of their spouse. This aspect of the reform may be diminished by various sociocultural norms and stereotypes that lessen women's employment opportunities (Motlagh, 2021).

7. Conclusion

This paper examines whether enhancing women's standing in the household and society by increasing the minimum age for marriage, as well as other policies promoting women's agency and divorce rights, has led to an improvement in the nutritional status of children. The answer is affirmative. It demonstrates the existence of a significant increase in the diversity of food consumption following the adoption of the policy, supporting the central hypothesis of this study that the implementation of the Ethiopian Family Law (EFL) has positive effects on the well-being of affected women's children.

These findings are essential in the context of Ethiopia for several reasons. In 2004, between 40 and 60 percent of the country's population was food insecure, and 45 percent of households resided below the poverty line, according to a Food and Agriculture Organization report[16] on food security issues in Ethiopia. This statistic ranks Ethiopia as one of the most food-insecure countries in the sub-Saharan African region, a condition that is exacerbated by the changing climate and rapid population growth, as well as the low adoption of agricultural technology to increase food production. In addition, 28 percent of infant deaths in Ethiopia are related to malnutrition, 57 percent of children under the age of five are anemic, and a high percentage of children have deficiencies in Iron, Vitamin A, Folic Acid, Iodine, and Zinc. Given the country's poor performance in food security and the poor quality of child nutrition, the finding that EFL adoption could have a significant effect on child nutritional intake due to changes in a woman's status within and outside the household and in choosing a quality spouse,

[16] See https://agris.fao.org/agris-search/search.do?recordID=ET2005000047

which could enhance their capacity to care for their children and negotiate a better outcome, calls for stricter enforcement of this policy.

Reference

Abate, G.T., M. Dereje, K. Hirvonen, and B. Minten. 2020. "Geography of Public Service Delivery in Rural Ethiopia." *World Development* 136: 105133.

Ahmed, A., J. Hoddinott, and S. Roy. 2019. "Food Transfers, Cash Transfers, Behavior Change Communication and Child Nutrition: Evidence from Bangladesh." International Food Policy Research Institute, Discussion Paper, https://ebrary.ifpri.org/digital/collection/p15738coll2/id/133420

Akresh, R., P. Verwimp, and T. Bundervoet. 2011. "Civil War, Crop Failure, and Child Stunting in Rwanda." *Economic Development and Cultural Change* 59(4): 777-810.

Alebachew, A., and C. Waddington. 2015. *Ethiopia: Human Resources for Health Reforms*. Geneva: World Health Organisation.

Almond, D., and J. Currie. 2011. "Killing Me Softly: The Fetal Origins Hypothesis." *Journal of Economic Perspectives* 25(3): 153-172.

Baird, S., C. McIntosh. and B. Ozler. 2019. "When the Money Runs Out: Do Cash Transfers have Sustained Effects on Human Capital Accumulation?" *Journal of Development Economics* 140 (issue C): 169-185.

Beckerman-Hsu, J.P., P. Chatterjee, R. Kim, S. Sharma, and S.V. Subramanian. 2020. "A Typology of Dietary and Anthropometric Measures of Nutritional Need among Children across Districts and Parliamentary Constituencies in India." *Journal of Global Health* 10(2).

Belles-Obrero, C., and M. Lombardi. 2023. "Will You Marry Me, Later? Age-of-Marriage Laws and Child Marriage in Mexico." *The Journal of Human Resources* 58(3):

Bharadwaj, P. 2015. "Impact of Changes in Marriage Law: Implications for Fertility and School Enrollment." *The Journal of Human Resources* 50(3): 614-654.

Bhargava, A., and F. Docquier. 2008. "HIV Pandemic, Medical Brain Drain, and Economic Development in Sub-Saharan Africa." *The World Bank Economic Review* 22(2): 345-366.

Chari, A.V., R. Heath. A. Maertens. and F. Fatima. 2017. "The Causal Effect of Maternal Age

at Marriage on Child Wellbeing: Evidence from India." *Journal of Development Economics* 127: 42-55.

Chicoine, L. 2019. "Schooling with Learning: The Effect of Free Primary Education and Mother Tongue Instruction Reforms in Ethiopia." *Economics of Education Review* 69: 94-107.

Corradini, V., and G. Buccione. 2023. "Unilateral Divorce Rights, Domestic Violence, and Women's Agency: Evidence from the Egyptian *Khul* Reform." *Journal of Development Economics* 160: 102947.

De Brauw, A., D.O. Gilligan. J. Hoddinott. And S. Roy. 2014. "The Impact of Bolsa Famılia on Women's Decision-Making Power." *World Development* 59: 487-504.

Field, E., and A. Ambrus. 2008. "Early Marriage, Age of Menarche, and Female Schooling Attainment in Bangladesh." *Journal of Political Economy* 116 (5): 881 – 929.

Freyaldenhoven, S., C. Hansen. and J.M. Shapiro. 2019. "Pre-event Trends in the Panel Event-study Design." *American Economic Review* 109: 3307–3338.

Frost, M.B., R. Forste. and D.W. Haas. 2005. "Maternal Education and Child Nutritional Status in Bolivia: Finding the Links." *Social Science and Medicine* 60 (2): 395-407.

Gebre, T.Z. 2020. "Free Primary Education, Timing of Fertility, and Total Fertility." *The World Bank Economic Review* 34(3): 730-748.

Hallward-Driemeier, M., and O. Gajigo. 2013. "Strengthening Economic Rights and Women's Occupational Choice: The Impact of Reforming Ethiopia's Family Law." World Bank Policy Research Working Paper

Harari, M. 2019. "Women's Inheritance Rights and Bargaining Power: Evidence from Kenya." *Economic Development and Cultural Change* 68: 189–238.

Heath, R., and X. Tan. 2020. "Intrahousehold Bargaining, Female Autonomy, and Labor Supply: Theory and Evidence from India." *Journal of the European Economic Association* 18(4): 1928–1968.

Ickowitz, A., B. Powell, M.A. Salim, and T.C.H. Sunderland. 2014. "Dietary Quality and Tree Cover in Africa." *Global Environmental Change* 24: 287-294.

Jones, R., R. Haardorfer, U. Ramakrishnan, K.M. Yount, S. Miedema, and A.W. Girard. 2019. "Women's Empowerment and Child Nutrition: The Role of Intrinsic Agency." *SSM - Population Health* 9: 100475

Manley, J., Y. Balarajan, S. Malm, L. Harman, J. Owens, S. Murthy, D. Stewart, N.E. Winder-Rossi, and A. Khurshid. 2020. "Cash Transfers and Child Nutritional Outcomes: a Systematic Review and Meta-Analysis." *BMJ Global Health* 5 (12): e003621.

Manley, J., S. Gitter, and V. Slavchevska. 2013. "How Effective are Cash Transfers at Improving Nutritional Status?" *World Development* 48: 133-155.

McGavock, T. 2021. "Here Waits the Bride? The Effect of Ethiopia's Child Marriage Law." *Journal of Development Economics* 149. https://doi.org/10.1016/j.jdeveco.2020.102580

Melesse, M.B. 2021. "The Effect of Women's Nutrition Knowledge and Empowerment on Child Nutrition Outcomes in Rural Ethiopia." *Agricultural Economics* 52(6): 883-899

Miller, N.P., F.G. Ardestani, F. Bagheri, H. Wong, S. Stokes, B. Mengistu, M. Paulos, N. Agonafir, M. Sylla, A. Ameha, B.G. Birhanu, S. Khan, and E.T. Lemango. 2021. "Barriers to the Utilization of Community-based Child and Newborn Health Services in Ethiopia: a Scoping Review." *Health Policy, and Planning* 36: 1187-1196.

Ministry of Agriculture – Ethiopia. 2014. *Productive Safety Net Programme Phase IV Programme Implementation Manual*. Addis Ababa: Ministry of Agriculture.

Motlagh, S.L., 2021. *Strengthening Gender Mainstreaming Strategies of the European Union Delegation to Ethiopia*. Brussels: European Union.

Neumann, C.G., N.O. Bwibo, S.P. Murphy, M. Sigman, S. Whaley, L.H. Allen, D. Guthrie, R.E. Weiss, and M.W. Demment. 2003. "Animal Source Foods Improve Dietary Quality, Micronutrient Status, Growth and Cognitive Function in Kenyan School

Children: Background, Study Design, and Baseline Findings." *Journal of Nutrition* 133 (11 Suppl. 2).

Pankhurst, A. 1992. *Resettlement and Famine in Ethiopia: The Villagers' Experience.* Manchester: University Press.

Pausewang, S., K. Tronvoll, and L. Aalen. (Eds.). 2002. *Ethiopia since the Derg: A Decade of Democratic Pretension and Performance.* Zed Books, London.

Raj, A., N. Saggurti, D. Balaiah, and J. Silverman. 2009. "Prevalence of Child Marriage and its Effect on Fertility and Fertility-control Outcomes of Young Women in India: a Cross-sectional Observational Study." *The Lancet* 373(9678): 1883-1889.

Ramachandran, R. 2017. "Language Use in Education and Human Capital Formation: Evidence from the Ethiopian Educational Reform." *World Development* 98: 195-213.

Saaka, M. 2020. "Women's Decision-making Autonomy and its Relationship with Child Feeding Practices and Postnatal Growth." *Journal of Nutritional Science* 9: e38.

Seid, Y., 2016. "Does Learning in Mother Tongue Matter? Evidence from a Natural Experiment in Ethiopia." *Economics of Education Review* 55: 21-38.

Sisay, M.G. 2015. "Departure of Ethiopian Family Laws: the Need to Redefine the Place of Societal Norms in Family Matters." *Haramaya Law Review* 4(1): 81-105.

Smith, L., 2013. *Making Citizens in Africa: Ethnicity, Gender, and National Identity in Ethiopia*. Cambridge University Press.

Stifel, D., and B. Minten. 2017. "Market Access, Well-being, and Nutrition: Evidence from Ethiopia." *World Development* 90: 229-241.

Tassew, S.G. 2007. "Judicial Implementation of the Revised Family Code in Addis Ababa." PhD Thesis, Old Dominion University.

UNICEF (2021), Nutrition, Retrieved from https://www.unicef.org/ethiopia/nutrition

Van de Gaer, D., J. Vandenbossche, and J.L. Figueroa. 2014. "Children's Health Opportunities and Project Evaluation: Mexico's Oportunidades Program." *The World Bank Economic Review* 28(2): 282-310.

Vandercasteelen, J., S.T. Beyene, B. Minten, and J. Swinnen. 2018. “Big Cities, Small Towns, and Poor Farmers: Evidence from Ethiopia.” *World Development* 106: 393-406.

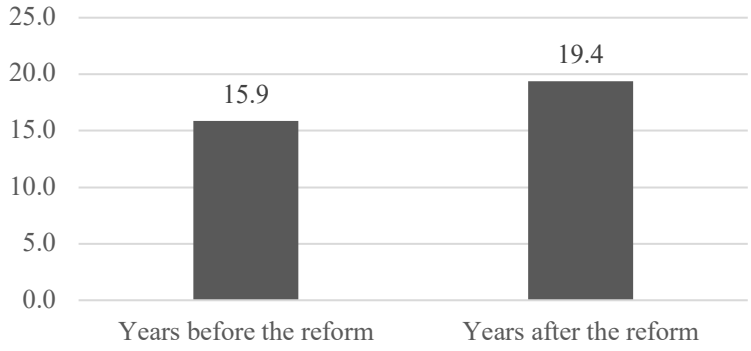
Woldemichael, A., D. Kidane. and A. Shimeles. 2022. “Food Inflation and Child Health.” *The World Bank Economic Review* 36(3): 757-773.

World Bank. 2012. *Gender Equality and Development*. Washington: World Bank

Yitayal, M., Y. Berhane, A. Worku, and Y. Kebede. 2014. “Health Extension Program Factors, Frequency of Household Visits and being Model Households, Improved Utilization of Basic Health Services in Ethiopia.” *BMC Health Services Research* 14: 156–165.

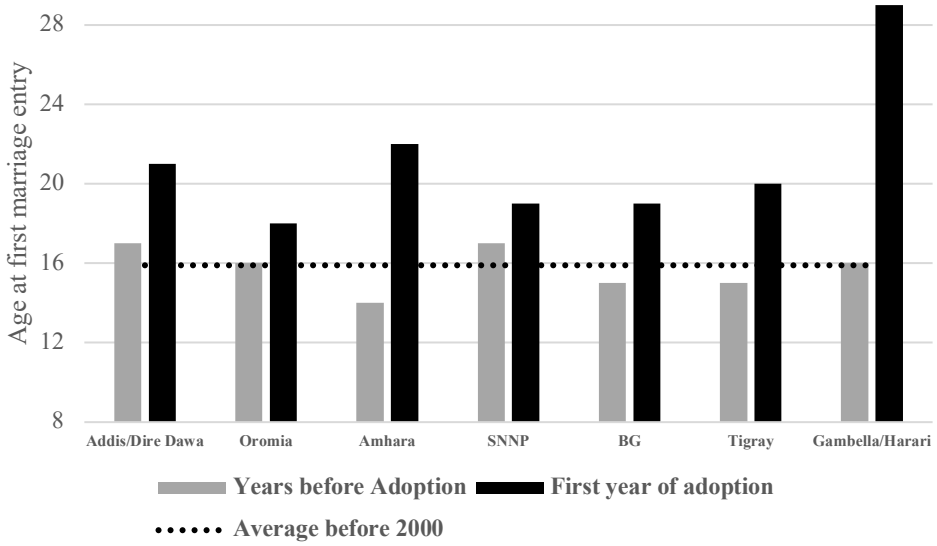
FIGURES

Figure 1: Age at Marriage Entry at Pre- and Post-reform



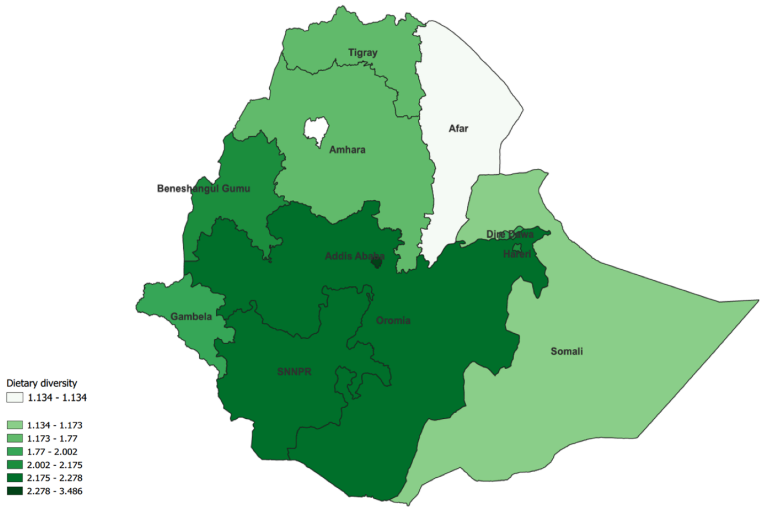
Notes: The values represent the average age of entry into marriage for the sampled women before and after the implementation of the reform.
Source: Author's computation.

Figure 2: Age at Marriage Entry within-region before and the First Year after the Reform Adoption



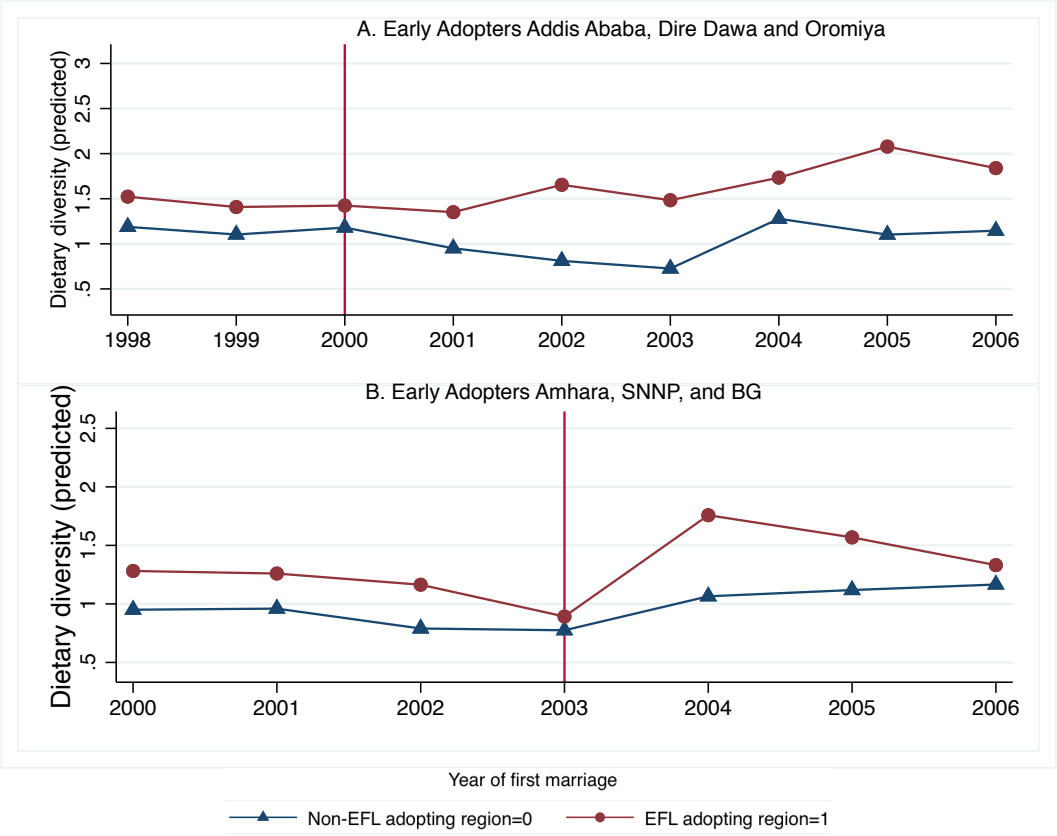
Notes: This graph depicts the average age of entry into marriage in each of the reform-adopting regions before and immediately after the reform was implemented. It also presents the average age of marriage entry before 2000 for all regions.
Source: Author's computation.

Figure 3: Average Dietary Diversity by Regions in Ethiopia



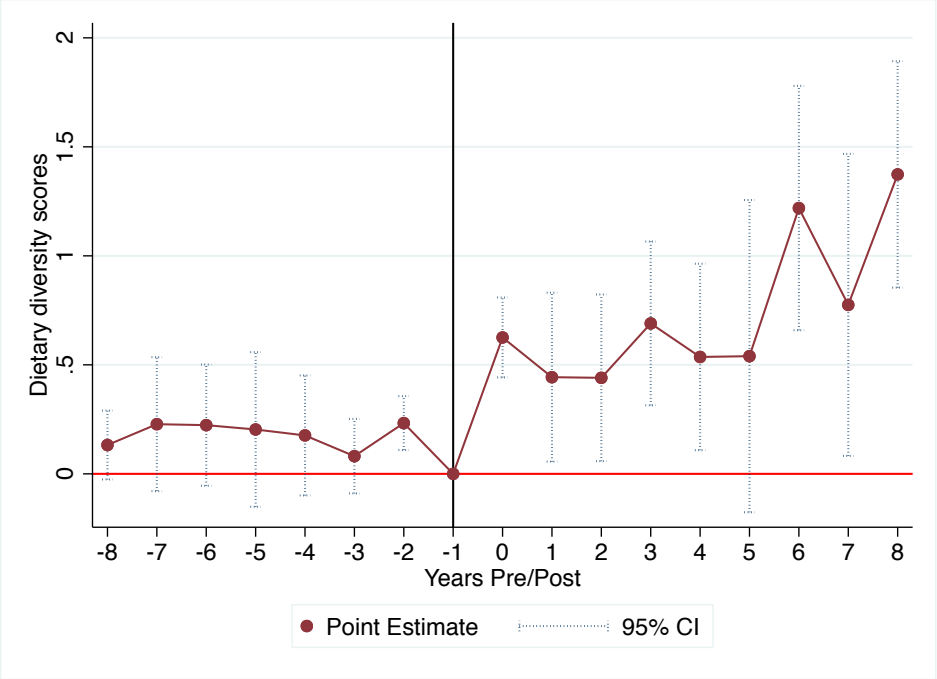
Notes: This graph depicts the average dietary diversity score as previously defined for Ethiopian regions.
Source: Author's computation.

Figure 4: Showing Parallel Trends in Dietary Diversity for Early Adopters



Notes: Trends are only presented in periods closer to and immediately after the date of the adoption of the EFL in the early adopting regions (Figures 4A and 4B).
Source: Author's computation.

Figure 5: Event-Study Estimates of the Effect of EFL Adoption on Dietary Diversity



Notes: The graph displays the point estimates and confidence intervals of the regression for dietary diversity scores by each time period before and after the EFL implementation.
Source: Author's computation.

TABLES

Table 1: Summary Statistics of the Estimation Sample

	All sample	
	Mean	SD
Outcome variables		
Dietary diversity	0.658	1.480
Fruit & vegetable consumption	0.077	0.266
Vitamin A rich fruit & vegetable consumption	0.057	0.231
Green leafy vegetable consumption	0.011	0.104
Other fruits & vegetables	0.056	0.230
Animal source food consumption	0.059	0.236
Explanatory variables		
Household size	6.398	2.356
Asset index	0.693	1.166
Urban dummy	0.178	0.382
Age	35.491	7.790
Other variables		
Highest educational level	0.370	0.915
Age at first marriage	15.962	3.484

Notes: The statistics for health investments, enduring and temporal health outcomes are related to the child of the sampled women, while the remaining statistics are those for the sample women.
Source: Author's computation.

Table 2: Effects of the Family Law on Dietary Diversity

	Dietary diversity score	
	[1a]	[1b]
Compliant × Post	0.279***	0.255**
	(0.082)	(0.085)
Compliant	1.242	1.113
	(0.911)	(0.811)
Mean Dep. Var.	1.935	1.935
Observations	55,335	55,335
R-squared	0.367	0.371

Notes: All regressions include controls for region-specific linear time trends, and the following fixed effects – the year of marriage, region of location, survey year, the community of residence, religion, and ethnicity. Compliant is a binary indicator if the region of location has adopted the family law by the survey year, while *post* is a binary indicator if the age at marriage entry coincides with periods after the family law was adopted in her region of location. The sample includes married women who began childbearing after marriage entry. Columns "a' includes the following covariates – index for household assets (sum of ownership of the following assets - including radio, television, refrigerator, bicycle, electricity, motorcycle/scooter, car/truck, and telephone), household size, urban dummy (1 if the household is in an urban location), and age of the woman. Column b also includes these covariates with education and age at marriage entry of the sampled woman. All of the estimations are weighted using sample weights provided in the DHS. Standard errors in brackets are clustered by region. ***p < 0.01; **p < 0.05.

Source: Author's computation.

Table 3: Effects of the Family law on child's nutrition intake

	Fruit & vegetable consumption [1]	Vitamin A rich fruit & veg. consumption [2]	Green leafy veg. consumption [3]	Other fruits & vegetables [4]	Animal source food consumption [5]
Compliant × Post	0.087**	0.104**	0.061**	0.056	0.054***
	(0.038)	(0.033)	(0.027)	(0.035)	(0.017)
Compliant	0.042	-0.064	-0.104	0.076	0.148
	(0.190)	(0.111)	(0.063)	(0.146)	(0.167)
Mean Dep. Var.	0.225	0.166	0.032	0.166	0.174
Observations	55,335	55,335	55,335	55,335	55,335
R-squared	0.274	0.243	0.238	0.269	0.236

Notes: All notes are similar to those in Table 2. Standard errors in brackets clustered by region of residence.
***p < 0.01; **p < 0.05; *p<0.1.
Source: Author's computation.

Table 4: Effects of the Family law on Indicators of Child Anthropometry and Anemic Level

	Child is underweight, stunted, & wasted [1]	Child is underweight [2]	Child is stunted [3]	Child is wasted [4]	The child is moderately or severely anemic [5]
Compliant × Post	-0.023*	-0.013	-0.006	-0.012	-0.083*
	(0.010)	(0.017)	(0.030)	(0.017)	(0.044)
Compliant	0.033	-0.026	-0.001	0.026	-0.217
	(0.027)	(0.042)	(0.086)	(0.026)	(0.151)
Mean Dep. Var.	0.018	0.125	0.131	0.042	0.282
Observations	46,603	55,335	55,335	55,335	21,494
R-squared	0.034	0.064	0.069	0.035	0.146

Notes: All notes are similar to those in Table 2. Standard errors in brackets clustered by region of residence.
***p < 0.01; **p < 0.05; *p<0.1.
Source: Author's computation.

Table 5: Effects of the Family law on a woman's decisions regarding her sexual relations

	Age at marriage entry [1]	Age at first childbirth [2]	Age at first sexual encounter [3]	Husband and wife jointly decide contraception [4]
Compliant × Post	0.039**	0.398***	0.262***	0.061**
	(0.017)	(0.105)	(0.089)	(0.029)
Compliant	0.001	0.151	-0.070	-0.015
	(0.017)	(0.100)	(0.114)	(0.033)
Mean Dep. Var.	16.597	18.803	16.485	0.741
Observations	44,936	40,035	24,021	8,007
R-squared	0.985	0.516	0.597	0.153

Notes: The outcome variables are as displayed at the top of each column. The analysis uses only data for the individual women in the household. All other notes are presented in Table 2. ***p < 0.01 and **p < 0.05.

Source: Author's computation.

Table 6: Effects of the Family law on a woman's decisions regarding her marital relations

	The husband resides at home with the woman. [1]	Spouse has Pry., Sec., or Univ. Edu. [2]	Spouse Educ. In a single year [3]	Age diff between spouse & the woman [4]	Spouse is Professional, managerial, and skilled employment [5]
Compliant × Post	0.055***	0.044***	0.359**	-0.608**	0.009
	(0.015)	(0.015)	(0.165)	(0.295)	(0.014)
Compliant	-0.028***	0.015	0.183	-1.034	-0.023*
	(0.010)	(0.013)	(0.119)	(0.232)	(0.013)
Mean Dep. Var.	0.886	0.456	3.319	8.524	0.203
Observations	37,834	42,883	42,857	37,856	42,514
R-squared	0.419	0.344	0.485	0.070	0.302

Notes: The outcome variables are as displayed at the top of each column. The analysis uses only data for the individual women in the household. All other notes are presented in Table 2. ***p < 0.01 and **p < 0.05.

Source: Author's computation.

Table 7: Effects of the Family law on indicators of outside options and women's agency

	The woman alone or with her spouse decides to spend her own cash.	Respondent is currently working	Respondent worked in the last 12 months	Respondent worked all year, not seasonal or occasional	Earns cash or cash and kind from work
	[1]	[2]	[3]	[4]	[5]
Compliant × Post	0.024	0.003	0.007	0.025	0.003
	(0.022)	(0.016)	(0.015)	(0.022)	(0.018)
Compliant	0.045	-0.011	-0.010	-0.020	-0.098***
	(0.029)	(0.047)	(0.049)	(0.067)	(0.015)
Mean Dep. Var.	0.402	0.394	0.440	0.530	0.575
Observations	28,499	44,914	39,133	22,740	22,781
R-squared	0.140	0.185	0.211	0.312	0.422

Notes: The outcome variables are as displayed at the top of each column. The analysis uses only data for the individual women in the household. All other notes are presented in Table 2.
Source: Author's computation.

APPENDIX

Table A1: Dates of EFL Adoption by Region

Region	Dates of EFL adoption	False adoption dates
Addis Ababa	07/04/2000	14/10/2000
Afar	Not yet implemented	Not yet implemented
Amhara	06/25/2003	20/06/2001
Benishangul-Gumaz (BG)	05/01/2006	16/03/2002
Dire Dawa	07/04/2000	10/08/2**005**
Gambella	01/01/2008	03/01/2003
Harari	08/01/2008	09/01/2004
Oromia	07/10/2002	11/01/2006
Southern Nations, Nationalities, and Peoples (SNNP)	10/23/2004	30/05/2007
Somali	Not yet implemented	Not yet implemented
Tigray	02/20/2007	29/08/2007

Notes: The "dates of EFL adoption" is the actual implementation date of EFL in each region. Only the Afar and Somali regions did not implement EFL at the time this research was conducted. The "False adoption dates" are randomly generated. The false reform dates are arbitrarily assigned to each region implementing the EFL.
Source: Author's compilation from different sources.

Table A2: Effects of the Family Law on Child's Nutrition Intake (Robustness Checks)

	Dietary diversity score								
	Clustering at DHS-cluster level	Two-way clustering at region and marriage entry year	Including an instrumented covariate	*Completed primary education and above*	*Have more than 1 year educated in a single year*	*Can read or write*	Controlling for household proximity to city	Adjust for PSNP regions	Using a falsified EFL adoption dates
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Compliant × Post	0.335*	0.279***	0.306***	0.061	0.047	0.040	0.287***	0.279***	0.259
	(0.175)	(0.099)	(0.092)	(0.043)	(0.042)	(0.046)	(0.088)	(0.082)	(0.233)
Compliant	1.040*	1.242*	1.232	-0.005	-0.004	0.008	0.993	1.175	1.205
	(0.556)	(0.679)	(0.913)	(0.029)	(0.029)	(0.015)	(0.959)	(0.962)	(0.900)
Distance (log)							-0.136***		
							(0.032)		
Distance (<25km)							-0.418**		
							(0.135)		
Distance (25-50km)							-0.143		
							(0.089)		
Distance (>50km)							-0.227**		
							(0.084)		
Observations	55,335	55,335	55,335	161,092	161,092	160,977	55,335	55,335	55,335
R-squared	0.255	0.367	0.367	0.290	0.292	0.254	0.368	0.367	0.367

Notes: The outcome variables are in italics and are displayed at the top of each column. The Table only report the estimates for the preferred model that does not include covariates for education and age at marriage entry. All other notes are as presented in Table 2. The instrumented covariate in column 3 is the average schooling rate of women married in the two years post-EFL adoption. The additional covariate in column 7 is a binary indicator for samples from rural locations in the eight PSNP targeted regions, including *Afar*, *Amhara, Dire Dawa, Harari, Oromiya*, SNNP, *Somali*, and *Tigray*. The false EFL adoption dates are displayed in Table A1. Distance to the nearest city is estimated in its logarithm form, measured as the distance between the household location presented in the DHS geolocation information and the nearest city or town with a population above 20,000 population. Standard errors in brackets clustered by region. ***p < 0.01; **p < 0.05; *p<0.1.

Source: Author's computation.